

Appln No.: 08/822,186
Amendment dated June 23, 2005
In Response to Office Action dated February 23, 2005

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in this application.

Listing of Claims:

Claim 1 (currently amended): A device for inducing local bone or cartilage formation, comprising:

a bone morphogenetic protein selected from the group consisting of OP1, OP2, OP3, BMP2, BMP3, BMP4, BMP5, BMP6, BMP9, BMP10, BMP11, BMP12, BMP15, BMP16, DPP, Vgl, 60A protein, GDF-1, GDF3, GDF5, GDF6, GDF7, GDF8, GDF9, GDF10 and GDF11, capable of inducing repair of endochondral bone, or cartilage, chondral, or osteochondral defects;

a ~~non synthetic, non polymeric~~ matrix selected from the group consisting of collagen, apatites, hydroxyapatites, tricalcium phosphate, and admixtures thereof; and

a binding agent selected from the group consisting of cellulose and salts thereof;

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wherein said binding agent has a degree of substitution of 0.65-0.90 and a viscosity of about 10-200 cP at a 4% (w/v) concentration of said binding agent.

Claim 2 (canceled).

Claim 3 (previously presented): The device of claim 1, wherein said bone morphogenetic protein is selected from the group consisting of OP1, OP2, BMP2, BMP4, BMP5, and BMP6.

Claim 4 (currently amended): A device for inducing local bone and cartilage formation comprising a bone morphogenetic protein comprising an amino acid sequence having at least 70% homology with the C-terminal 102-106 amino acids, including the conserved seven cysteine domain, of human OP1;

a ~~non synthetic, non polymeric~~ matrix selected from the group consisting of collagen, apatites, hydroxyapatites, tricalcium phosphate, and admixtures thereof; and

a binding agent selected from the group consisting of cellulose and salts thereof;

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wherein said binding agent has a degree of substitution of 0.65-0.90 and a viscosity of about 10-200 cP at a 4% (w/v) concentration of said binding agent; and

wherein said bone morphogenetic protein is capable of inducing repair of endochondral bone when implanted together with a matrix in a mammal.

Claim 5 (previously presented): The device of claim 1 wherein said bone morphogenetic protein is OP-1.

Claim 6 (withdrawn): The device of claim 1 wherein said device comprises at least two different bone morphogenetic proteins.

Claim 7 (canceled).

Claim 8 (original): The device of claim 1 wherein said matrix is collagen.

Claim 9 (withdrawn): The device of claim 1 wherein said device comprises at least two different matrix materials.

Claim 10 (canceled).

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Claim 11 (currently amended): The device of claim 1 wherein said binding agent is ~~selected from the group consisting of alkylcelluloses~~ an alkylcellulose.

Claim 12 (original): The device of claim 1 wherein said binding agent is selected from the group consisting of methylcellulose, methylhydroxyethylcellulose, hydroxyethylcellulose, hydroxypropylmethylcellulose, carboxymethylcellulose, sodium carboxymethylcellulose, hydroxyalkylcelluloses, and admixtures thereof.

Claim 13 (currently amended): The device of claim 1 wherein said binding agent is carboxymethylcellulose or the a sodium salt thereof.

Claim 14 (withdrawn): The device of claim 1 wherein said device comprises at least two different binding agents.

Claim 15 (original): The device of claim 1 further comprising a wetting agent.

Claim 16 (original): The device of claim 15 wherein said wetting agent is saline.

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Claim 17 (currently amended): A device for inducing local bone or cartilage formation, comprising at least approximately 1.25 mg of OP-1 and at least approximately 180 mg of carboxymethylcellulose per 1000 mg of collagen matrix, wherein said carboxymethylcellulose has a degree of substitution of 0.65-0.90 and a viscosity of about 10-200 cP at a 4% ~~w/v~~ (w/v) concentration of said carboxymethylcellulose.

Claim 18 (previously presented): The device of claim 17 comprising at least approximately 2.5 mg of OP-1 per 1000 mg of collagen matrix.

Claim 19 (previously presented): The device of claim 17 or 18 comprising at least approximately 200 mg of carboxymethylcellulose per 1000 mg of collagen matrix.

Claim 20 (previously presented): The device of claim 1 wherein the binding agent to matrix ratio is one part by weight binding agent to 1-10 parts by weight matrix.

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Claim 21 (previously presented): The device of claim 20 wherein the binding agent to matrix ratio is one part by weight binding agent to 5 parts by weight matrix.

Claim 22 (previously presented): The device of claim 20 wherein the binding agent to matrix ratio is one part by weight binding agent to 1-5 parts by weight matrix.

Claim 23 (previously presented): The device of claim 1 wherein the binding agent to matrix ratio is 1-10 parts by weight binding agent to 1 part by weight matrix.

Claim 24 (previously presented): The device of claim 23 wherein the binding agent to matrix ratio is fewer than 10 parts by weight binding agent to one part by weight matrix.

Claim 25 (currently amended): The device of claim 17-
or 18 or 19 further comprising saline.

Claims 26-30 (canceled).

Claim 31 (previously presented): A device for inducing local bone or cartilage formation comprising:

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OP-1;

collagen matrix; and

carboxymethylcellulose having a degree of substitution of 0.65-0.90 and a viscosity of about 10-200 cP at a 4% (w/v) concentration of said carboxymethylcellulose.

Claim 32 (currently amended): A kit for inducing local bone or cartilage formation, the kit comprising:

(a) a first receptacle housing a bone morphogenetic protein selected from the group consisting of OP1, OP2, OP3, BMP2, BMP3, BMP4, BMP5, BMP6, BMP9, BMP10, BMP11, BMP12, BMP15, BMP16, DPP, Vgl, 60A protein, GDF-1, GDF3, GDF5, GDF6, GDF7, GDF8, GDF9, GDF10 and GDF11 and a ~~non synthetic, non polymeric~~ matrix selected from the group consisting of collagen, apatites, hydroxyapatites, tricalcium phosphates and admixtures thereof, and

(b) a second receptacle housing a binding agent selected from the group consisting of cellulose, and salts thereof,

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wherein said binding agent has a degree of substitution of 0.65-0.90 and a viscosity of about 10-200 cP at a 4% (w/v) concentration of said binding agent.

Claim 33 (previously presented): The kit of claim 32 further comprising a receptacle adapted to house a wetting agent.

Claim 34 (canceled).

Claim 35 (currently amended): A kit for inducing local bone or cartilage formation, the kit comprising:

a first receptacle housing a bone morphogenetic protein selected from the group consisting of OP1, OP2, OP3, BMP2, BMP3, BMP4, BMP5, BMP6, BMP9, BMP10, BMP11, BMP12, BMP15, BMP16, DPP, Vg1, 60A protein, GDF-1, GDF3, GDF5, GDF6, GDF7, GDF8, GDF9, GDF10 and GDF11, a ~~non-synthetic, non-polymeric~~ matrix selected from the group consisting of collagen, apatites, hydroxyapatites, tricalcium phosphates, and admixtures thereof, and a binding agent selected from the group consisting of cellulose, and salts thereof,

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wherein said binding agent has a degree of substitution of 0.65-0.90 and a viscosity of about 10-200 cP at a 4% (w/v) concentration of said binding agent.

Claim 36 (previously presented): The kit of claim 35, further comprising a second receptacle adapted to house a wetting agent.

Claim 37 (previously presented): The device of claim 5, wherein the amount of the OP-1 ranges from approximately 0.125 mg to 10.0 mg.

Claim 38 (previously presented): The device of claim 37, wherein the amount of the OP-1 is approximately 3.5 mg.

Claim 39 (new): The device of claim 19 further comprising saline.